We claim:

Sub B2

1. A label switching routing method for a multi-protocol label switching (MPLS) optical communications network, comprising:

attaching a wavelength to each said label,

establishing a datapath as a sequence of locally wavelength labels between a source and a sink in said optical communications network,

converting a first wavelength to a second wavelength and forwarding the traffic to said sink according to said datapath, and

transmitting to said source said label mapped with said second wavelength.

2. A method as claimed in claim 1, further comprising attaching timeslots to said label so as to form a composite label having a wavelength portion and timeslots portion.

3. A method as claimed in claim 2, wherein said timeslots have variable size.

4. A method as claimed in claim 2, further comprising splitting said label received at an incoming interface into two outgoing composite labels.

5. A method as claimed in claim 2, further comprising combining two incoming composite labels into one outgoing composite label.

6. A method as claimed in claim 1, wherein said step of establishing a datapath is controlled by said multi-protocol label switching (MPLS) protocol.

7. The routing protocol of claim 6, further including a constrained routing label distribution protocol (CR-LDP) for hierarchically controlling time,

frequency, and statistically multiplexed paths and forming said composite layer in a single session.

8. An optical/time cross-connect (OTXC) for providing wavelength to wavelength conversion in a multi-protocol label switching (MPLS) optical communications network, comprising:

means for attaching a wavelength to said label;

means for converting a first wavelength associated with an incoming signal into a second wavelength associated with an outgoing signal;

mapping said label based on said second wavelength; and

forwarding to the source said label mapped with said second wavelength.

9. The optical/time cross-connect of claim 8, wherein said means for converting are controlled by said multi-protocol label switching (MPLS) protocol.

10. The optical/time cross-connect of claim 8, further including multiplexing means for providing statistical multiplexing, frequency division multiplexing, and time division multiplexing under the control of said MPLS protocol.

11. The optical/time cross-connect of claim 8, wherein said OTXC further comprising means for assigning timeslots for a wavelength flowing back to the source whenever said wavelength arrives with an attached timeslot.

12. The optical/time cross-connect of claim 11, wherein said timeslots have a variable size in accordance with the speed of the optical carriers connected to a signaling interface of said OTXC, and the label request at said signaling interface.

add B2